Intercomparisons of GCMs:
Structure and Mechanisms of Internanual Climate Variability

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The presentation focused on the description of our newly funded diagnostic project. The project's goal is to scrutinize the structure AND mechanisms of interannual climate variability in both uncoupled and coupled general circulation model (GCM) simulations/integrations of present-day climate. We believe that such dynamically oriented analysis, involving diagnostic modeling, can highlight the deficiencies in GCM's physical parameterizations which effectively limit the credibility of model predictions of regional climate variability and change. We will focus on the simulation of ENSO structure and impacts, NAO variability in the troposphere and stratosphere, and of PDO's impact on circulation and hydroclimate.

Our research strategy begins with the objective analysis of simulation errors in both recurrent anomaly structure (e.g., ENSO surface winds) and its forcing (e.g., diabatic heating). Subsequent attribution of the identified circulation errors to specific features of the model's forcing error from diagnostic modeling should help focus on the key parameterization deficiencies--the ones that are most limiting.

Synergistic interactions with PCMDI are anticipated since the AMIP, CMIP, and the National Assessment integrations are archived there. Our diagnostic research and development activities should lead to the transfer of some analysis techniques from the science to the application domain, with the help of software experts at PCMDI.